GROUP ON EARTH OBSERVATIONS

GEO and Some Perspectives on Landsat

USGS-NASA Science Team Meeting
Buellton, California

10 February 2013

Barbara J. Ryan
Director, GEO Secretariat

GROUP ON
EARTH OBSERVATIONS

GEO --The Group on Earth Observations

Earth Observation Summit

U.S. Department of State
Washington D.C.
31 July 2003

GROUP ON EARTH OBSERVATIONS

Created in 2005, to develop a coordinated and sustained Global Earth Observation System of Systems (GEOSS) to enhance decision making in nine Societal Benefit Areas (SBAs)

GEO today:

89 Members

67 Participating Organizations

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GEO Objectives

- Improve and Coordinate Observation Systems
- Advance Broad Open Data Policies/Practices
- Foster Increased Use of EO Data and Information
- Build Capacity

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A Global, Coordinated, Comprehensive and Sustained System of Observing Systems

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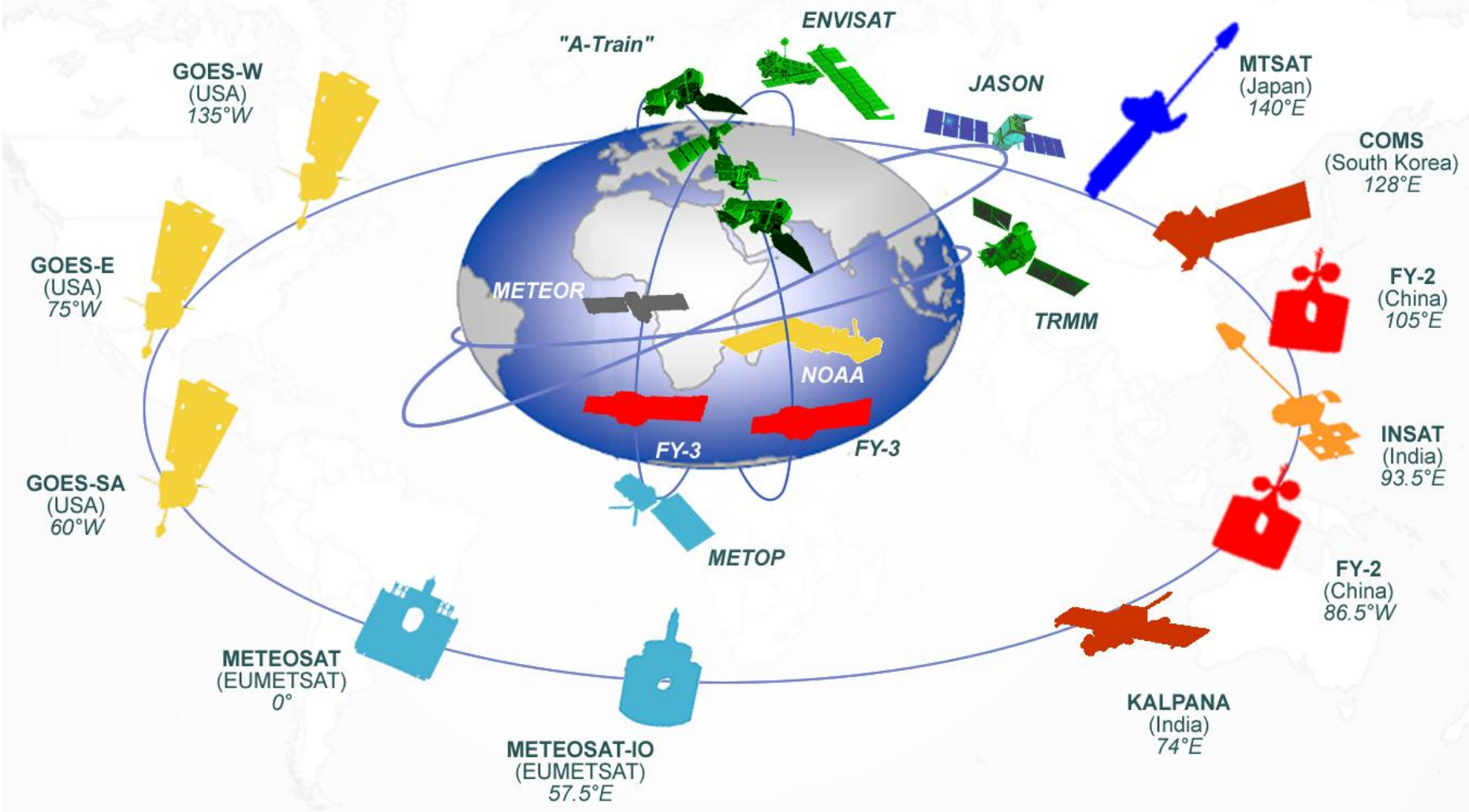
Space-based Assets



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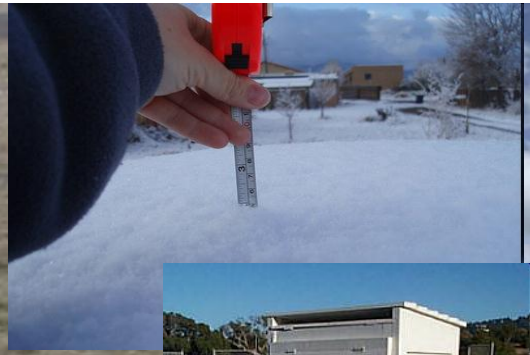
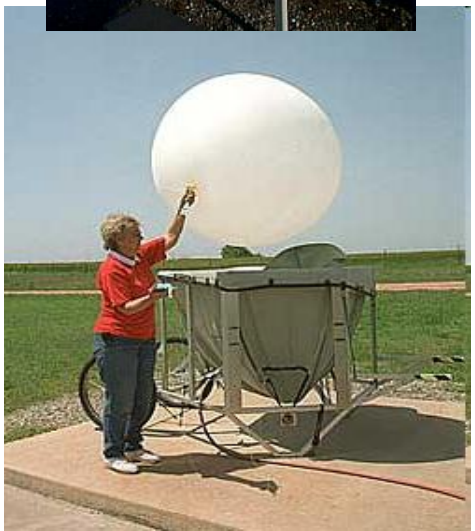
In-situ Systems



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GEOSS Targeted Gaps

1. Uncertainty over continuity of observations
2. Large spatial and temporal gaps in specific data sets
3. Limited access to data and associated benefits in developing world
4. Inadequate data integration and interoperability
5. Lack of relevant processing systems to transform data into useful information
6. Inadequate user involvement
7. Eroding or little technical infrastructure in many parts of the world

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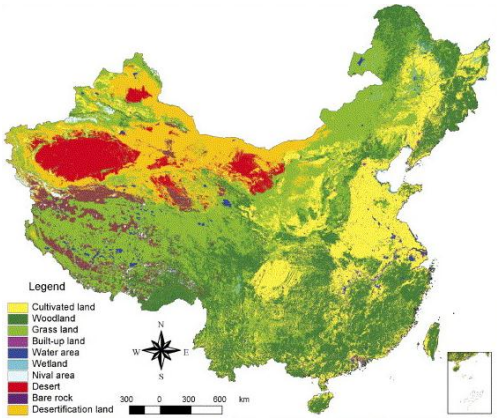
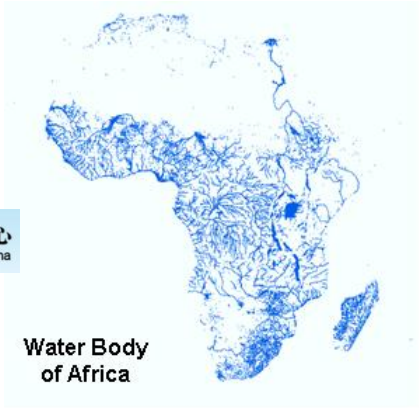
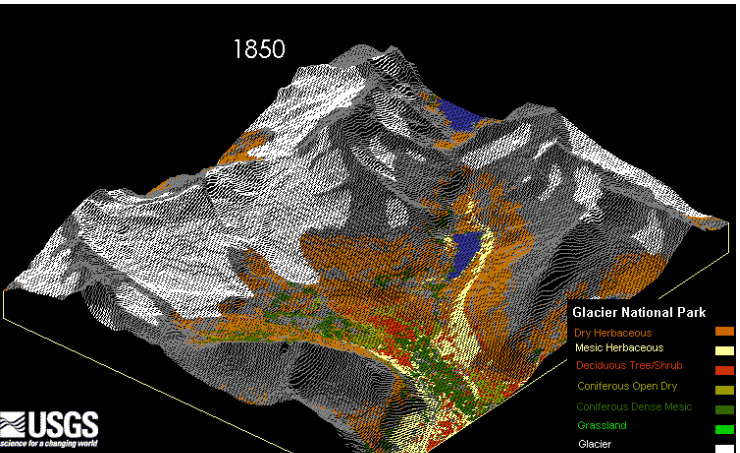
Advanced Land-Cover Products

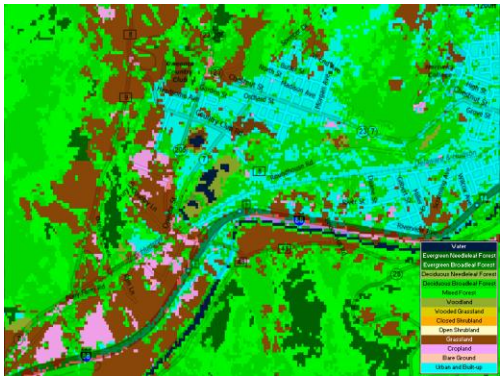
(Canada, China, EC, Greece, Japan, Netherlands, Nigeria, Spain, Sweden, UK, USA, Spain, EEA, ESA, GTOS, ISPRS)



国家基础地理信息中心
NGCC National Geomatics Center of China







* Global 30m products
* Major land cover types (eg. wetland)
* Independent validation databases
* Global Land Cover Portal
* Growing int'l consensus

GOFC-GOLD GLOBAL OBSERVATION OF FOREST AND LAND COVER DYNAMICS

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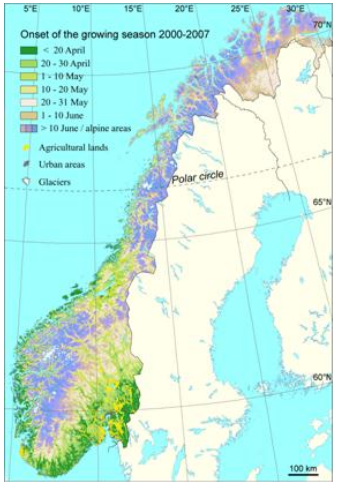
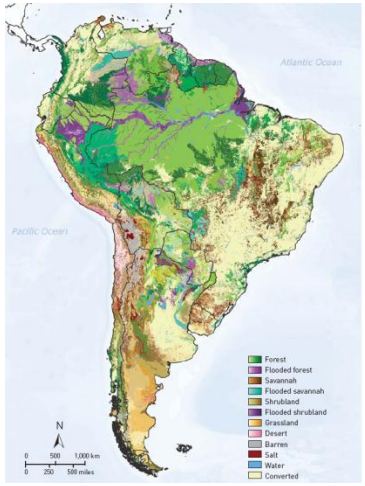
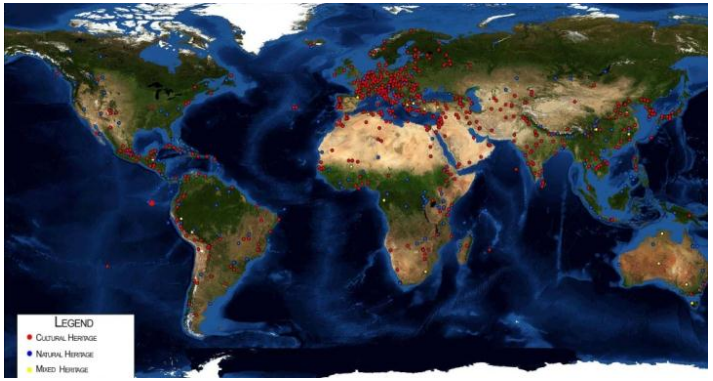
Ecosystem Classification & Mapping

(Australia, Austria, Brazil, Canada, China, EC, Italy, Paraguay, USA, RCMRD, UNESCO)







UNESCO

USGS science for a changing world

CHINESE ACADEMY OF SCIENCES

ABCC

* SHARE mountain stations operational
* All ecosystem mapping data available; DataCORE
* New maps of growing season
* Atlas of 40 Chinese World Heritage Sites
* Decision-making support: ABCC program

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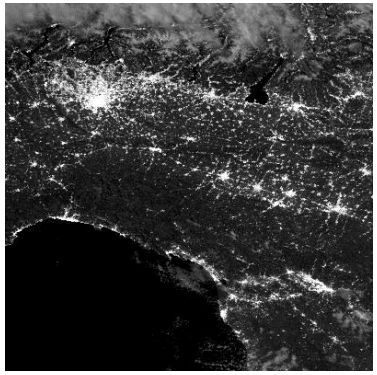
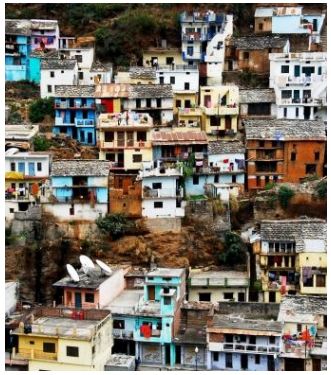
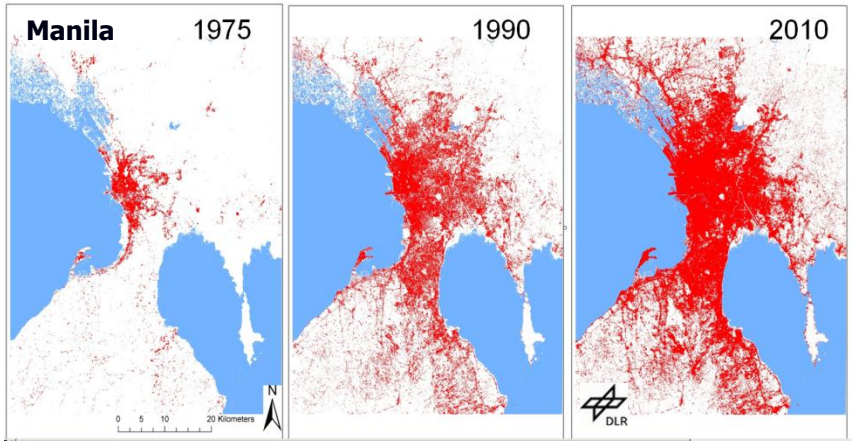
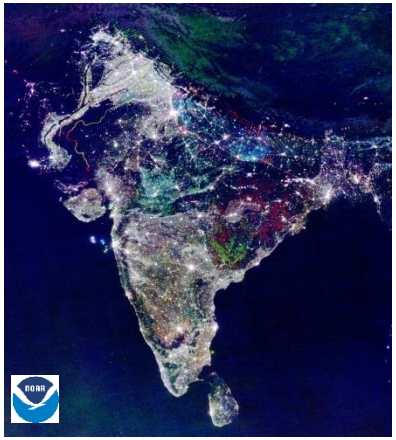
Global & Local Urban Footprints

(China, EC, Germany, Greece, Italy, Pakistan, USA)









* 35-yr evolution of 26 mega-cities
* Global night-time lights for 2012
* Urban Heat Island patterns
* Over 3'700 cities mapped using ASTER (15m)

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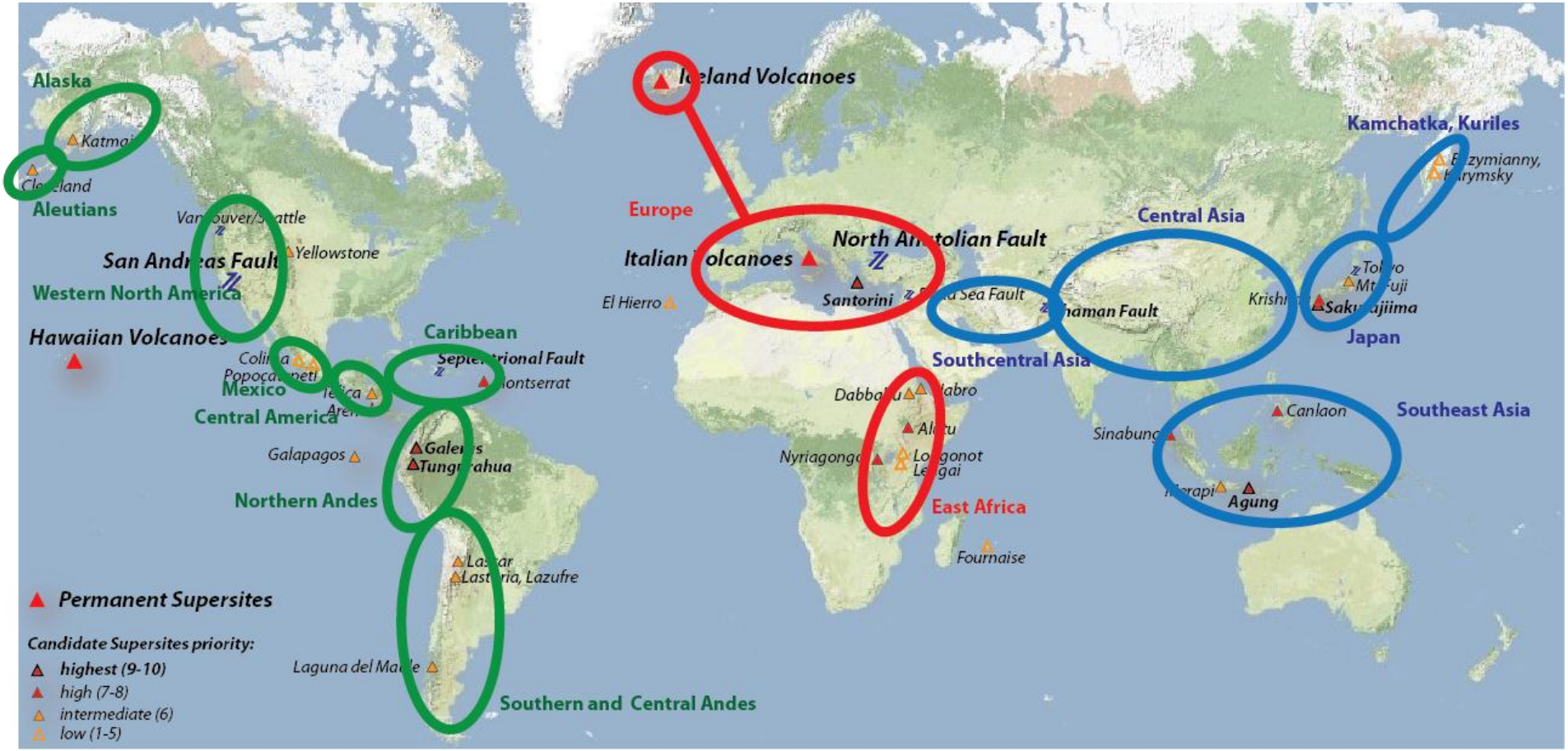
Global Supersites Candidate Natural Laboratories

Americas - USGS **Europe/Africa - EPOS** **Asia**



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GEOSS Implementation requires: *Data Sharing Principles*

- Full and Open Exchange of Data
- Data and Products at Minimum Time delay and Minimum Cost
- Free of Charge or Cost of Reproduction

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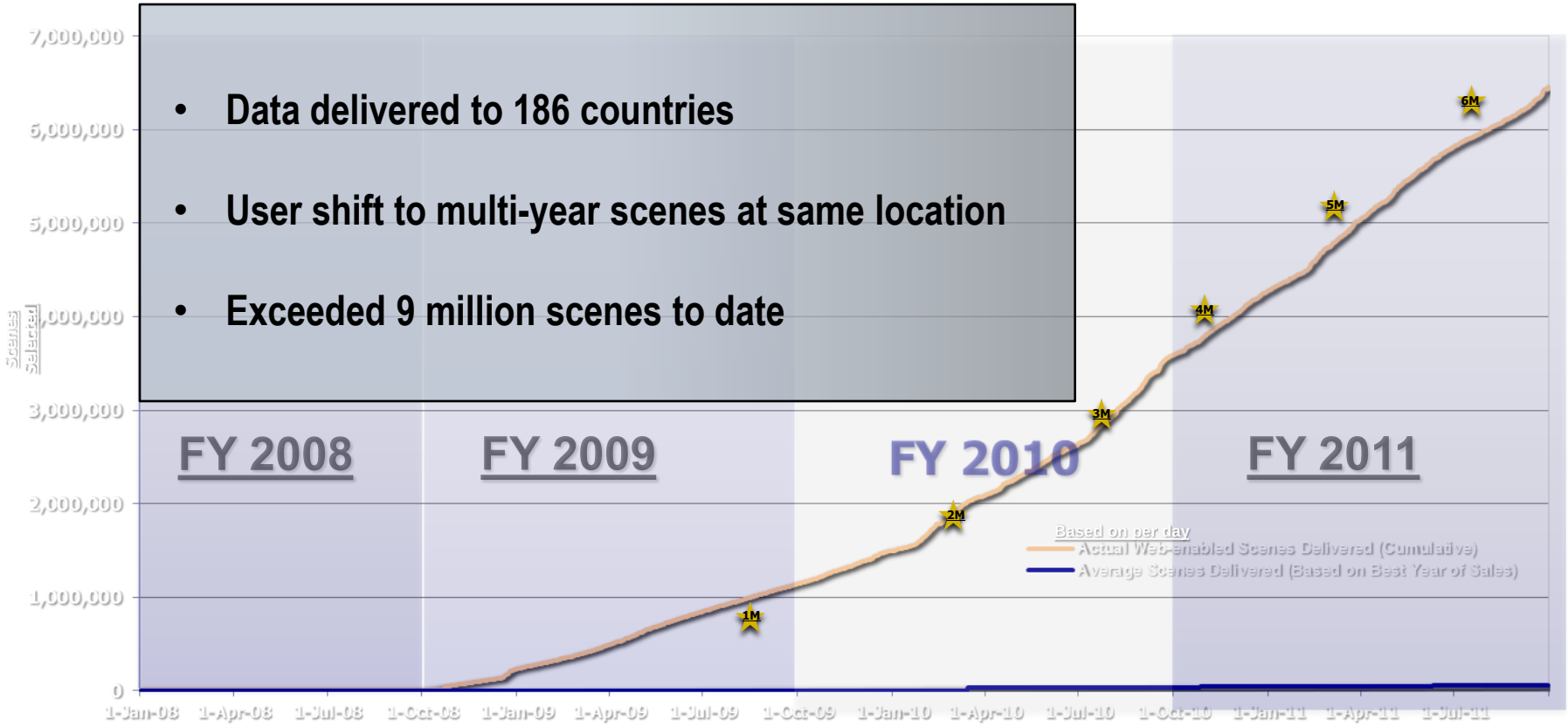
Landsat Internet Data Distribution

- Data delivered to 186 countries
- User shift to multi-year scenes at same location
- Exceeded 9 million scenes to date



Daily Average = 53 scenes for best year of sales (2001)

Daily Average ≅ 5,700 scenes of web-enabled data delivered

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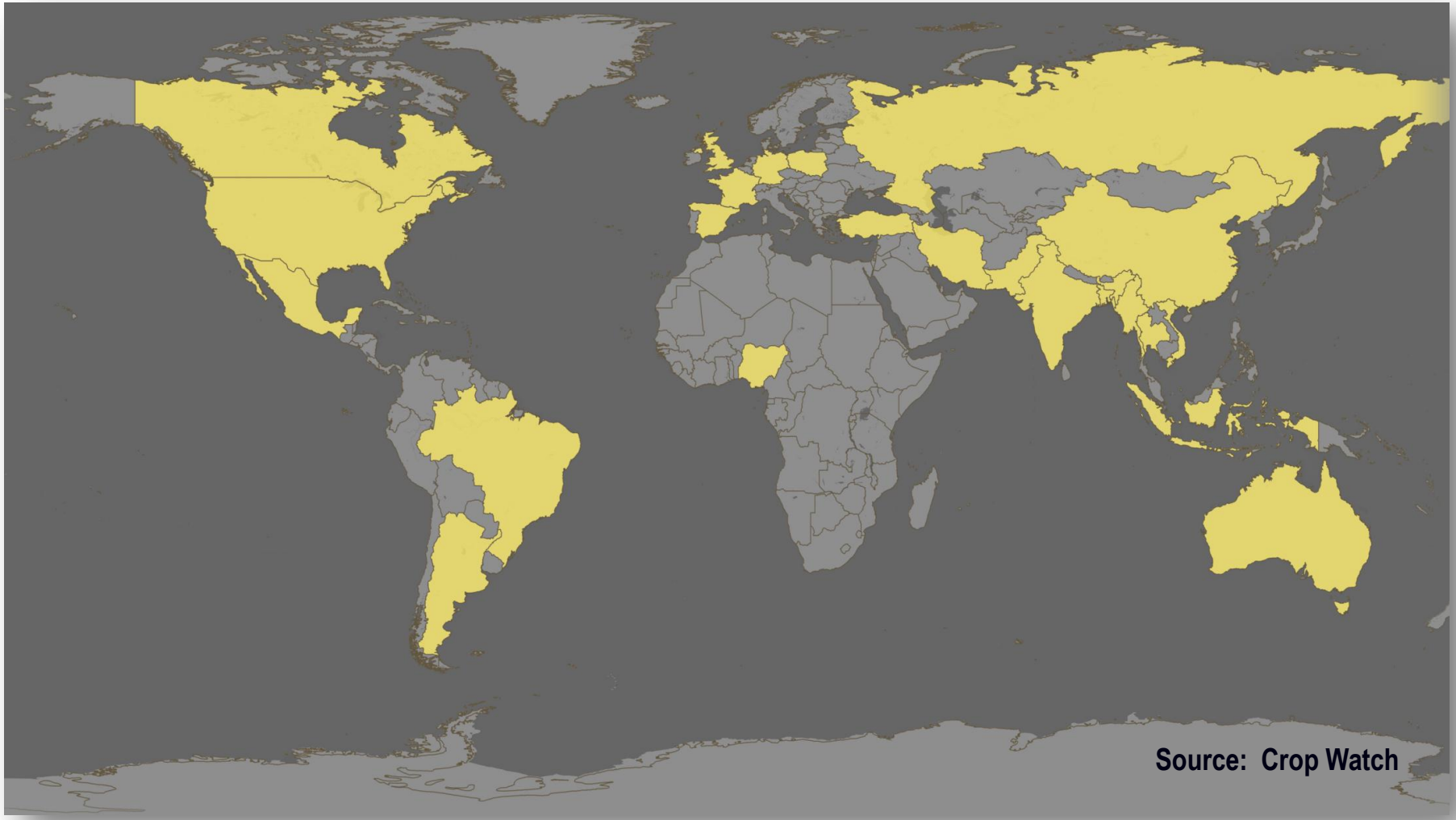
25 COUNTRIES PRODUCE OVER 80% OF WORLD CROPS



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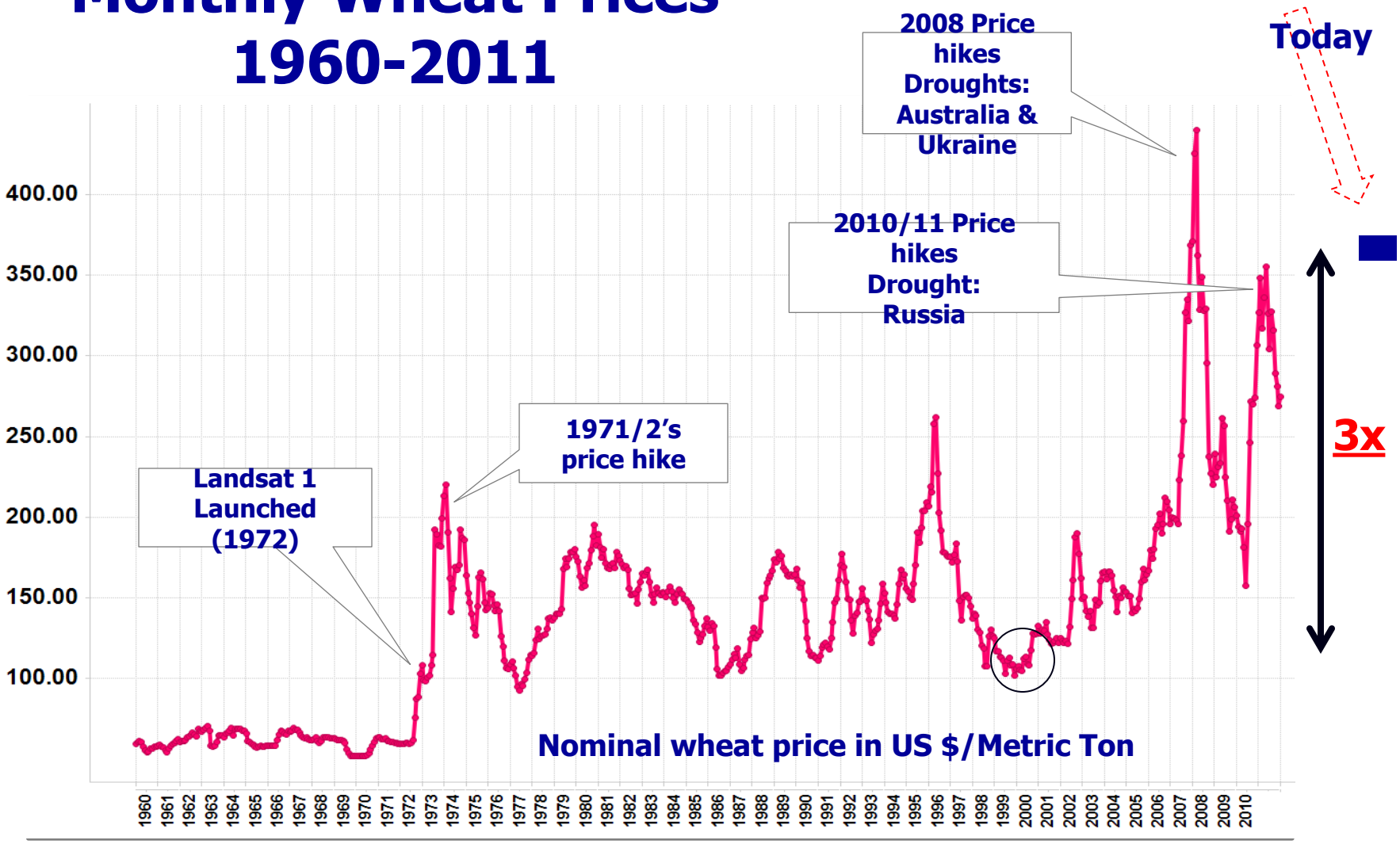
Monthly Wheat Prices 1960-2011



Source: World Bank

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Crop Information for Decision-Making

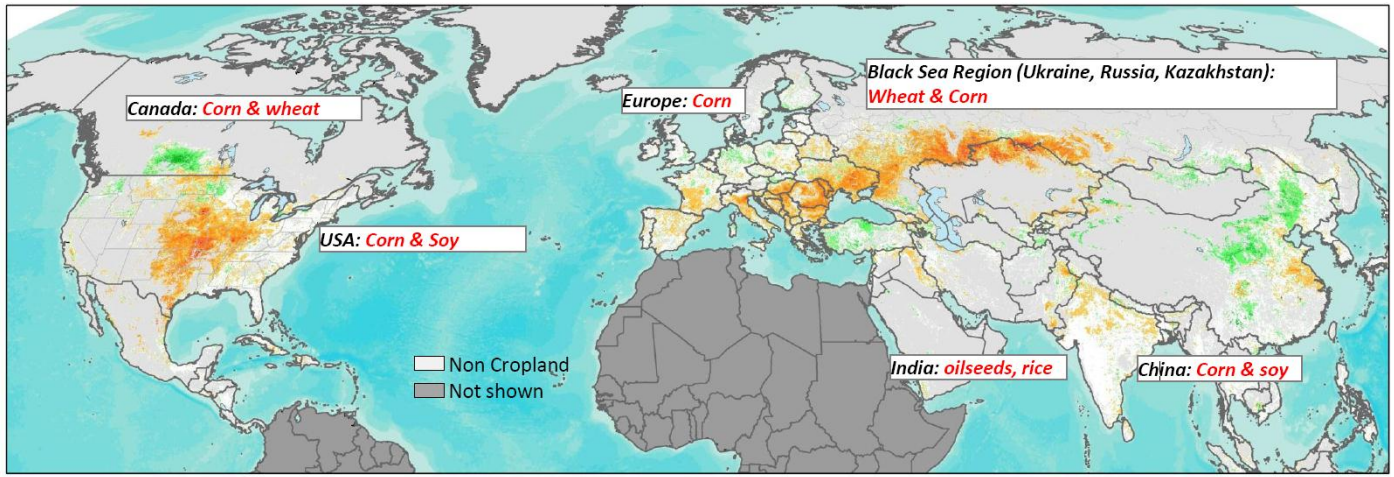
(Canada, China, EC, France, Japan, Kazakhstan, India, Mexico, Russia, USA, CEOS, FAO)

G20 FRANCE 2011 NEW WORLD NEW IDEAS

G2012 MÉXICO

GEOGLAM Global Agricultural Monitoring

Northern Hemisphere NDVI Crop Anomaly, August 13th, 2012



Crop NDVI Anomaly

-0.4	0	0.4
Worse than normal	normal	Better than normal

Observed highlights:

- Drought conditions persist in US, south eastern Ukraine, Russia, and Kazakhstan, with slight improvement in some areas in northern Kazakhstan
- Rains in India mitigate dry conditions

* GEOGLAM part of G20 Action Plan on Food Price Volatility
* New crop outlook
* Rice crop monitoring
* Draft space strategy

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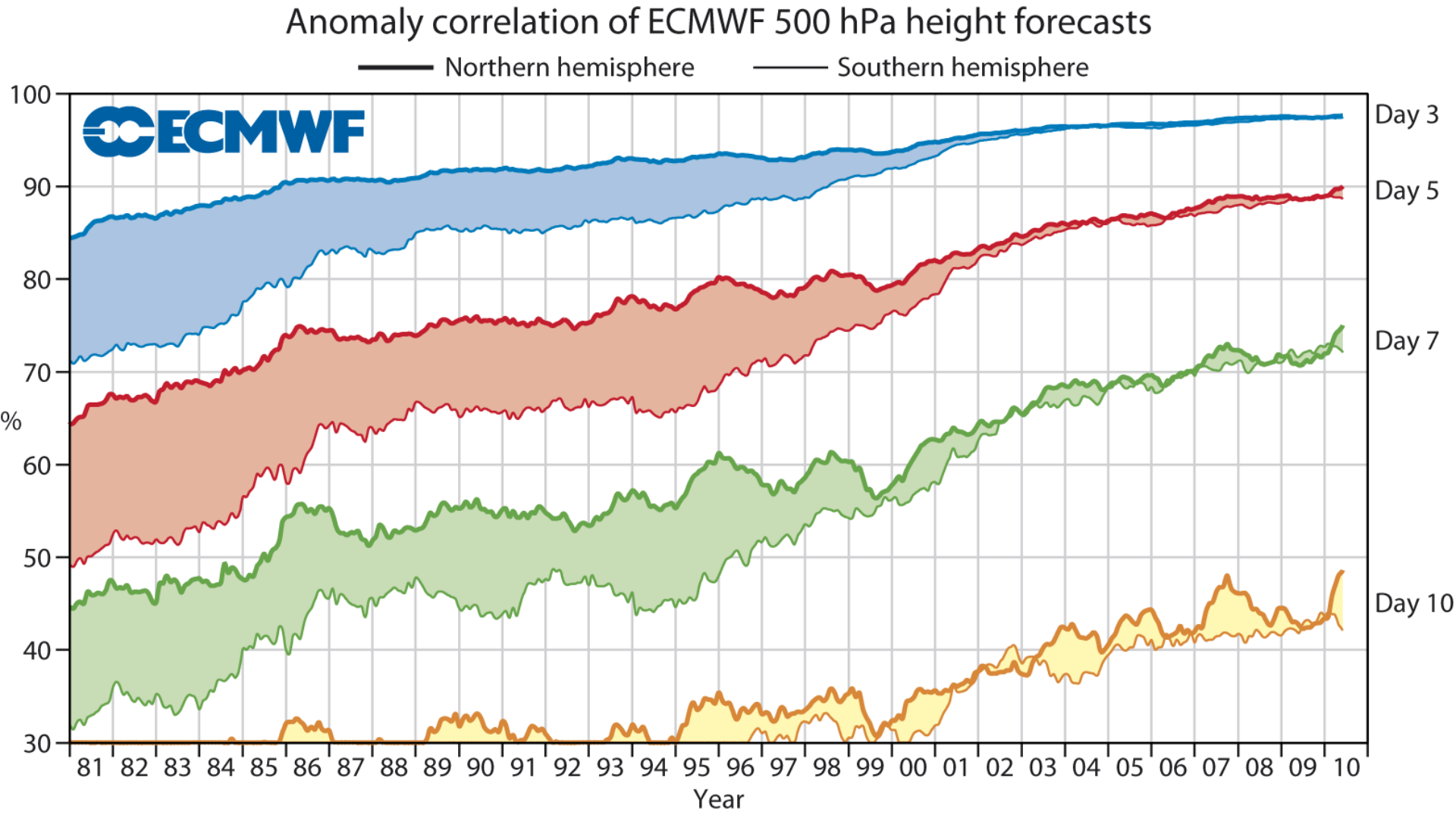
Great Advances in Global and Regional Weather Forecasts



Courtesy of ECMWF. Adapted and extended from Simmons & Hollingsworth (2002)

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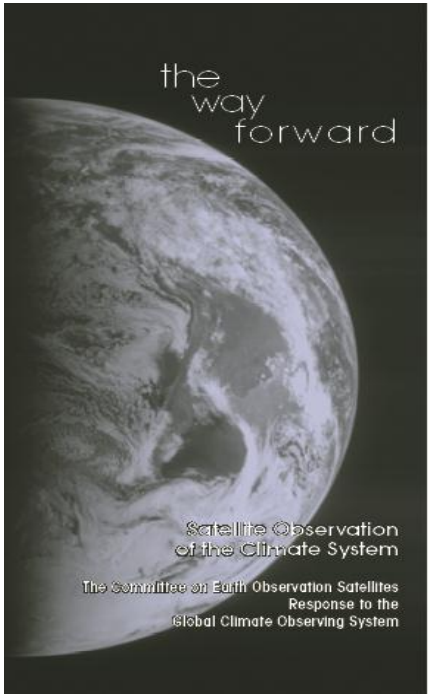

www.ceos.org

. . . both satellite and *in situ* data are required to better monitor, characterize, and predict changes in the Earth system. While *in situ* measurements will remain essential and largely measure what cannot be measured from satellites, Earth-observation satellites are the only realistic means to obtain the necessary global coverage, and with well-calibrated measurements will become the single most important contribution to global observations for climate.

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http://www.earthobservations.org

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